EXPERIMENT - 17

Object Oriented Programming Lab

Aim

Create class first with data members book no, book name and member function getdata and putdata. Create a class second with data members author name, publisher and members getdata and showdata. Derive a class third from first and second with data member no of pages and year of publication. Display all these information using array of objects of third class.

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Source Code:

```
#include <iostream>
#include <string>
using namespace std;

class first
{
    int bno;
    char bname[50];

public:
    void input()
    {
        cout << "\nEnter Book No. ";
        cin >> bno;
        cout << "\nEnter Book name: ";
        cin >> bname;
    }
    void output()
    {
        cout << "\nBook No.  : " << bno;
        cout << "\nBook Name : " << bname;
    }
};
class second
{
    char author[25];
    char publisher[25];

public:
    void indata()
```

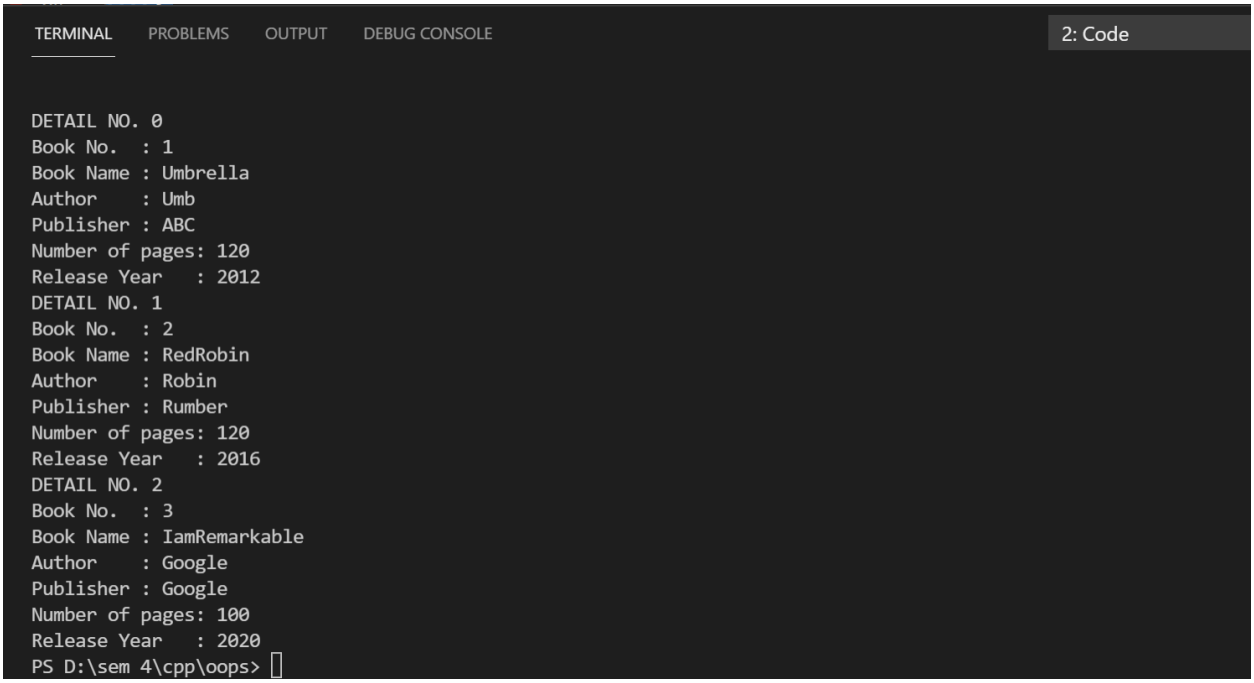
```
    {
        cout << "\nEnter Author: ";
        cin >> author;
        cout << "\nEnter Publisher: ";
        cin >> publisher;
    }
    void outdata()
    {
        cout << "\nAuthor    : " << author;
        cout << "\nPublisher : " << publisher;
    }
};
class third : public first, public second
{
    int pgn;
    int yr;

public:
    void in()
    {
        input();
        indata();
        cout << "\nEnter number of pages: ";
        cin >> pgn;
        cout << "\nEnter Release year  : ";
        cin >> yr;
    }
    void out()
    {
        output();
        outdata();
        cout << "\nNumber of pages: " << pgn;
        cout << "\nRelease Year   : " << yr;
    }
};

main()
{
    third t[5];
    int i, n;
    cout << "No. of details to be entered: ";
    cin >> n;
    for (i = 0; i < n; i++)
    {
        t[i].in();
```

```
    }
    for (i = 0; i < n; i++)
    {
        cout << "\nDETAIL NO. " << i;
        t[i].out();
    }
    return 0;
}
```

Output:

```
PS D:\sem 4\cpp\oops> cd "d:\sem 4\cpp\oops\" ; if ($?) { g++ library15.cpp -o library15 } ; if ($?) { .\librar
y15 }
No. of details to be entered: 3

Enter Book No. 1

Enter Book name: Umbrella

Enter Author: Umb

Enter Publisher: ABC

Enter number of pages: 120

Enter Release year  : 2012

Enter Book No. 2

Enter Book name: RedRobin

Enter Author: Robin

Enter Publisher: Rumber
```

```
TERMINAL  PROBLEMS  OUTPUT  DEBUG CONSOLE                    2: Code

Enter number of pages: 120

Enter Release year  : 2016

Enter Book No. 3

Enter Book name: IamRemarkable

Enter Author: Google

Enter Publisher:
Google

Enter number of pages: 100

Enter Release year  : 2020

DETAIL NO. 0
Book No.  : 1
Book Name : Umbrella
Author    : Umb
Publisher : ABC
```


TERMINAL
PROBLEMS
OUTPUT
DEBUG CONSOLE
2: Code
DETAIL NO. 0
Book No. : 1
Book Name : Umbrella
Author   : Umb
Publisher : ABC
Number of pages: 120
Release Year   : 2012
DETAIL NO. 1
Book No. : 2
Book Name : RedRobin
Author   : Robin
Publisher : Rumber
Number of pages: 120
Release Year   : 2016
DETAIL NO. 2
Book No. : 3
Book Name : IamRemarkable
Author   : Google
Publisher : Google
Number of pages: 100
Release Year   : 2020
PS D:\sem 4\cpp\oops>

Viva Questions

Q1) What is inheritance?

Ans.

Inheritance is one of the feature of Object Oriented Programming System(OOPs), it allows the child class to acquire the properties (the data members) and functionality (the member functions) of parent class.

Q2) What is child class?

Ans.

A class that inherits another class is known as child class, it is also known as derived class or subclass.

Q3) What is parent class?

Ans.

The class that is being inherited by other class is known as parent class, super class or base class.

Q4) What are the advantages of using inheritance in C++ Programming?

Ans.

The main advantages of inheritance are code reusability and readability. When child class inherits the properties and functionality of parent class, we need not to write the same code again in child class. This makes it easier to reuse the code, makes us write the less code and the code becomes much more readable.

Q5) What are advantages and disadvantages of inheritance?

Ans.

Disadvantages: -

- Inherited functions work slower than normal function as there is indirection.
- Improper use of inheritance may lead to wrong solutions.
- Often, data members in the base class are left unused which may lead to memory wastage.
- Inheritance increases the coupling between base class and derived class. A change in base class will affect all the child classes.

Advantages:

- Inheritance promotes reusability. When a class inherits or derives another class, it can access all the functionality of inherited class.
- Reusability enhanced reliability. The base class code will be already tested and debugged.
- As the existing code is reused, it leads to less development and maintenance costs.

- Inheritance makes the sub classes follow a standard interface.
- Inheritance helps to reduce code redundancy and supports code extensibility.
- Inheritance facilitates creation of class libraries.